

VERSION WITH MARKINGS TO SHOW CHANGE(S) MADE

Page 1 of the Specification:

PIGMENTED, WEATHERABLE MOLDING COMPOSITIONS

TECHNICAL FIELD

This invention relates to pigmented molding compositions. In a more specific aspect, this invention relates to pigmented molding compositions which have good weatherability. This invention also relates to a process for the manufacture of these compositions.

BACKGROUND OF THE INVENTION

Molding compositions have been manufactured and used for many years in forming various articles. Examples of these compositions include sheet molding compounds (SMC) and bulk molding compounds (BMC).

In many instances, pigments are added to molding compositions to achieve particular effects. These pigments are commonly added in either pure form or in the form of a dispersion (also referred to as a pigment paste). A typical pigment paste comprises pigment particles dispersed in a suitable carrier resin. Examples of suitable carrier resins are unsaturated polyesters having a low viscosity, such as described in U.S. Patent [4,009,255] 4,009,225, and polystyrene resins having oxazoline groups, such as described in European Patent Publication No. 272,127.

Pigment pastes are frequently used because of the difficulty under normal manufacturing conditions of dispersing pigment particles in a uniform manner into other substances, such as directly into molding compositions.

The prior art in this industry contains many disclosures of molding compositions and the improvements obtained with these compositions. For example, U.S. Patent 5,326,516 describes a method of preparing a cured pigmented thermosetting polymer molding composition which exhibits improved



Serial No. 09/778,052

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Claim 19 (Amended):

19. A process as defined by Claim 12 wherein the reinforcing agent is [gloss] glass fibers.

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In the Claims

Claim 19, line 2, delete "gloss" and insert ---glass---.

REMARKS

Reconsideration and allowance are requested.

Page 1 of this specification has been amended on line 25 to correct an inadvertent error in a U.S. patent number - 4,005,255 should be 4,005,225.

In accordance with 37 C.F.R. § 1.121, attached to this Amendment are marked up versions of original page 1 of the specification and Claim 19 to show the changes made.

In general terms, the present invention relates to pigmented molding compositions, such as sheet molding compositions and bulk molding compositions. Specifically, the molding compositions of this invention have good weatherability. As stated on page 2, the term "weatherability" refers to the stability of a molded article to environmental factors, such as humidity, ultraviolet radiation, temperature, etc.

The weatherability of a molded article is noticed primarily in the gloss and color retention of that article as a result of exposure to environmental factors.

Weatherability is a problem which has plagued the industry for some time. Stated another way, the pigmented molded articles of the prior art initially have good color and gloss. However, over time and after exposure to these environmental factors, these articles tend to lose color and gloss.

Applicants have discovered that if the materials which are used to manufacture a

molding composition are carefully selected and utilized, the resulting molded article has good weatherability.

I. The Objection to Claim 19

The Examiner has objected to Claim 19 because of a spelling error --- "gloss" should be "glass". This error has been corrected.

II. The Rejection Under Section 102

The Examiner has rejected Claims 1-3, 6, 8-14, 17 and 19-22 under 35 U.S.C. §102(b) as anticipated by Heel et al. U.S. Patent 5,094,797. This rejection is traversed for the following reasons.

The language of 35 U.S.C. §102(b) states that:

A person shall be entitled to a patent unless ---

- (b) the invention was patented or described in a printed publication in this or a foreign country. . . more than one year prior to the date of the application. . .

The interpretation of 102(b) is, without question, that the denial of a patent **requires that the reference teach** applicants' invention as defined by the claims. This requirement is also referred to as "anticipation," and the courts have provided clear and unambiguous definitions in this area.

In *General Electric Company v. United States*, 572 F.2d 745, 768, 198 U.S.P.Q. 65, 85 (U.S. Court of Claims 1978), a case involving Section 102(e), the Court stated:

To anticipate a claim a prior art reference must show **each and every element claimed**. Short of this, anticipation does not exist. *In re Royka*, 490 F.2d 981, 984, 180 U.S.P.Q. 580, 583 (Cust. & Pat. App. 1974).

(Emphasis added.)

Another case involving Section 102 is *Akzo N.V. et al. v. U.S. International Trade Commission*, 808 F.2d 1471, 1 U.S.P.Q.2d 1241 (CAFC 1986).

The Court stated at page 1245:

Under 35 U.S.C. § 102, anticipating requires that **each and every element of the claimed invention** be disclosed in a prior art reference. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851, 105 S.Ct. 172, 83 L. Ed. 2d 107 (1984). In addition, the prior art reference must be enabling, thus placing the allegedly disclosed matter in the possession of the public. *In re Brown*, 329 F.2d 1006, 1011, 141 U.S.P.Q. 245, 249 (CCPA 1964).

(Emphasis added.)

In *Rolls-Royce Limited et al. v. GTE Valeran Corporation*, 625 F. Supp. 343 (E.D. Michigan 1985), *affirmed*, 800 F.2d 1101, the District Court stated at page 352 with regard to the validity of a patent:

Anticipation under 35 U.S.C. § 102 **requires** the disclosure in a single prior art reference of **each element of the claim** under consideration. *Multifastener Corp. v. MacLean-Fogg Co.*, 572 F. Supp. 418 (E.D. Mich. 1983).

(Emphasis added.)

Similarly, in *Titanium Metals Corp. v. Mossinghoff*, 603 F. Supp. 87 (D.C. 1984), the District Court clearly stated on page 89:

Turning first to the issue raised under Section 102, the Court notes that the section has been interpreted as precluding the grant of a patent **only when** the claimed invention is described in a printed publication in such a manner that the disclosure in the publication **is specific to every critical element of the application claims** and when the disclosure in the publication is sufficiently enabling to place the subject matter claimed in the application in the public knowledge.

(Emphasis added.)

The very specific requirements of Section 102 were also discussed in *Rohm and Haas Company v. Mobil Oil Corporation*, 718 F.Supp. 274 (D. Del. 1989).

At page 299, the District Court stated:

"nticipation" requires that **each and every limitation** of Claim 1 be disclosed in the reference relied on . . .

(Emphasis added and citations omitted.)

Applicants believe that further citations are not necessary with regard to the requirements of a proper rejection under Section 102(b).

While the Heel et al. patent may disclose a process for preparing a pigmented curable molding compound, this patent does not teach applicants' invention as defined by the claims of the present application.

On page 2 of the Office Action, the Examiner states as follows:

The prior art of Heel claims composition comprising (a) unsaturated polyester, (b) monomer reactive with the polyester, (c) thermoplastic polymer, (d) color pigment and customary additives. The disclosed composition is utilized to make fiber glass reinforced SMC's by injection molding.

On page 3 of the Office Action, the Examiner provides additional statements about the disclosure of the Heel et al. patent in regard to auxiliary additives, fillers, fibers, etc.

While applicants may agree with the Examiner's statements regarding the disclosures of the Heel et al. patent, these disclosures do not anticipate the requirements of applicants' claims as required by Section 102(b).

Applicants refer to the following disclosure from line 67, column 2-line 8, column 3, of the Heel et al. patent:

A suitable thermoplastic polymer is for example polystyrene, high impact polystyrene, polymethyl methacrylate, polyvinyl acetate, ethylene vinyl acetate copolymer or corresponding copolymers and graft copolymers. It is also possible to use saturated polyesters and thermoplastic polyurethanes. It is similarly possible to use rubberlike block copolymers, in particular those formed from 40-95% by weight of diolefin, e.g. butadiene, isoprene or chloroprene, and 60-5% by weight of aromatic vinyl, e.g. styrene or p-methylstyrene.

This disclosure clearly shows that the Heel et al. patent does not teach applicants' use of a PMMA is non-aromatic **non-aromatic thermoplastic polymer**, as defined by the claims of the present application. In fact, this disclosure teaches that, in the Heel et al. patent, there is no distinction or advantage in using a non-aromatic thermoplastic polymer. The present only PS is aromatic invention establishes that such disclosure is not accurate.

Additionally, the Heel et al. patent fails to teach weatherable molding compositions, ^{Property resulting from composition} which is an essential feature of the claims of the present application. There is simply no teaching or disclosure in the Heel et al. patent of weatherable molding compositions.

In summary, the Heel et al. patent does not teach two essential features of applicants' claimed invention - (1) the use of a non-aromatic thermoplastic polymer and (2) weatherable molding compositions. Consequently, this rejection under Section 102(b) should be withdrawn.

III. The Rejections Under Section 103

In two rejections, the Examiner has used 35 U.S.C. § 103(a) as a basis for rejecting Claims 4-5, 7, 15-16, 18 and 23-24.

Section 103(a) requires that, if a patent is denied to an applicant, the differences between the subject matter sought to be patented and the prior art must be such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Section 103(a) further provides that patentability shall not be negative by the manner in which the invention was made.

With regard to the requirements for a proper obviousness rejection under Section 103, applicants refer to the following decisions.

The Court of Appeals for the Federal Circuit stated as follows in *In re Wright*, 6 U.S.P.Q.2d 1959, 1961 (CAFC 1988):

We repeat the mandate of 35 U.S.C. § 103: it is the invention as a whole that must be considered in obviousness determinations. The invention as a whole embraces the structure, its properties, **and the problem it solves.**

. . . The determination of whether a novel structure is or is not "obvious" **requires cognizance of the properties of that structure and the problem which it solves**, viewed in light of the teachings of the prior art.

. . . (the particular problem facing the inventor **must be considered** in determining obviousness).

...

. . . (it is error to focus "solely on the product created, rather than on the obviousness or nonobviousness of its creation"). . .

(Emphasis added and citations omitted.)

In dealing with the concept of obviousness, the CAFC in the *Wright* case clearly states on pages 1961-2:

Thus the question is whether what the inventor did would have been obvious to one of ordinary skill in the art **attempting to solve the problem upon which the inventor was working.**

The problem solved by the invention is always relevant. The entirety of a claimed invention, including the combination viewed as a whole, the elements thereof, and the properties and purpose of the invention, must be considered.

In either case, the requisite view of the whole invention mandates consideration of not only its structure but also its properties and **the problem solved.**

(Emphasis added and citations omitted.)

Applicants maintain that, without knowledge or recognition of their problem, the references cited by the Examiner cannot properly be asserted under the concept of obviousness. There must be at least a suggestion of applicants' problem in order for one having ordinary skill in this art to use the cited references as a basis or starting point toward a solution to such problem.

This theory is not new, as shown by the Court of Customs and Patent Appeals in *In re Shaffer*, 108 U.S.P.Q.326, 329 (CCPA 1956):

In fact, a person having the references before him **who was not cognizant** of appellant's disclosure would not be informed that the problem solved by appellant ever existed. Therefore, can it be said that these references **which never recognized appellant's problem** would have suggested its solution. We think not, and therefore feel that the references were improperly combined since there is no suggestion in either of the references that they can be combined to produce appellant's result.

(Emphasis added.)

In support of their position of nonobviousness, applicants also refer to *In re Hortman*, 121 U.S.P.Q. 218 (CCPA 1959) wherein the Court stated on page 219:

For, though the structure may be but a simple expedient when the novel concept is realized, that structure may not be obvious to the skilled worker

in the art where the prior art has failed to suggest the problem or conceive of the idea for its elimination.

(Emphasis added.)

As shown below, the clear facts are that (1) the prior art does not suggest applicants' problem and, therefore, (2) the prior art does not suggest applicants' solution to such problem.

A. Claims 4-5, 15-16 and 23-24 are rejected under 25 U.S.C. 103(a) as being unpatentable over Heel et al. U.S. Patent 5,094,797. This rejection is traversed for the following reasons:

The discussion provided above in regard to the Heel et al. patent is applicable to this rejection, and that discussion should be considered as repeated here.

The rejected Claims 4-5, 15-16 and 23-24 relate to either the monomer which will react with the unsaturated polyester or the glycol component which is used to produce the unsaturated polyester. While these claims relate to specific embodiments of applicants' invention, the essential features of that invention are defined in Claims 1 and 12. These essential features are neither taught nor suggested by the Heel et al. patent.

The objective (i.e., the problem addressed) of the Heel et al. patent is clearly stated in column 1, lines 51-61:

It is an object of the present invention to provide a simple and inexpensive process for preparing homogeneously pigmented curable molding compounds...

We have found that this object is achieved by the present invention when the pigment is dispersed with the aid of an extruder in a molten thermoplastic polymer and the latter is mixed with the polyester resin in a conventional manner.

The cited Heel et al. patent is not concerned with weatherability and, therefore, does not provide any teaching or suggestion in that regard. More specifically, the Heel et al. patent does not mention or discuss the concept of the weatherability of molding compositions, which applicants have done in the present application.

Stated another way, the Heel et al. patent fails to recognize the problem solved by applicants - i.e., the production of pigmented molding compositions which have good weatherability. Further, applicants have shown that the materials used to manufacture their molding compositions must be carefully selected and utilized to achieve the desired improvement in weatherability.

With further reference to the Heel et al. patent, the failure to teach or suggest the concept of weatherability (and, therefore, the failure to address that problem) is even clearer from Examples 1-5 of that patent. In each example under the heading of "Preparation of Molding Compounds", the objectives are homogeneous color and depth of shade. Therefore, one having ordinary skill in this art would not be lead to the Heel et al. patent when trying to solve a problem with weatherability.

The problem of weatherability which is addressed by applicants' invention is fully disclosed in the present application. As stated above, the term "weatherability" refers to the stability of a molded article to environmental factors, such as humidity, ultraviolet radiation,

temperature, etc. The ability to retain gloss and color is the principal characteristic which establishes that a molded article has good weatherability.

The "weatherability" results which applicants have achieved with the present invention are clearly shown in Table 1 (page 14 - gloss retention) and Table 2 (page 15 - color retention). In these Tables, the Exposure Energy numbers (in KJ/m^2) of 625, 1250 and 2500 are approximately equivalent to 6 months, 1 year and 2 years, respectively of outdoor exposure to environmental factors. The data in these Tables demonstrates that molded products from applicants' compositions are improved in terms of gloss and color retention over other molded products.

Neither the concept of weatherability nor the molding compositions to achieve weatherability is taught or suggested by the Heel et al. patent. Consequently, and contrary to the Examiner's statement on page 5 of the Office Action, one having ordinary skill in this art would not obtain **applicants' claimed invention** by utilizing the composition of the Heel et al. patent.

In summary, applicants' invention is not rendered obvious from the Heel et al. patent, and this rejection under Section 103(a) should be removed.

B. Claims 7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heel et al. U.S. Patent 5,094, 797 as applied to Claim 1-6, 8-17 and 19-24 above, and further in view of Brannon U.S. Patent 5,443,775. These two rejections are traversed for the following reasons:

The discussions provided above in regard to the Heel et al. patent are applicable to these rejections, and those discussions should be considered as repeated here. Consequently, the basic question is whether the Brannon patent can provide the teaching or suggestion which is not found in the Heel et al. patent.

As understood by applicants from page 5 of the Office Action, the Examiner's position is that the difference between the present invention and the disclosure of the Heel et al. patent is "the recitation of alumina hydrate filler of claims 7 and 18". The Examiner then states on page 6 of the Office Action:

In light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize aluminum hydrate with composition of the prior art of Heel and thereby obtain the claimed invention.

Applicants acknowledge that Example 1 of the Brannon patent discloses the use of aluminum hydrate in a pigmented thermosetting/thermoplastic polymer composition. However, to then conclude that aluminum hydrate with the composition of the Heel et al. patent leads to applicants' invention is simply not accurate.

As shown above, the Heel et al. patent neither teaches nor suggests a weatherable molding composition as defined by applicants' claims. Therefore, the addition of aluminum hydrate from the Brannon patent to the composition of the Heel et al. patent would not render applicants' invention obvious under the requirements of Section 103.

With regard to Claims 7 and 18, applicants recognize that alumina trihydrate is a conventional filler in molding compositions. However, the use of that filler in a molding composition as defined by applicants' Claims 1 and 12 is neither taught nor suggested by the Heel et al. patent alone or in combination with the Brannon patent.

In summary, the above discussion clearly supports the conclusion that applicants' invention is patentable over the Heel et al. and Brannon patents. Therefore, these two rejections under Section 103(a) should be removed.

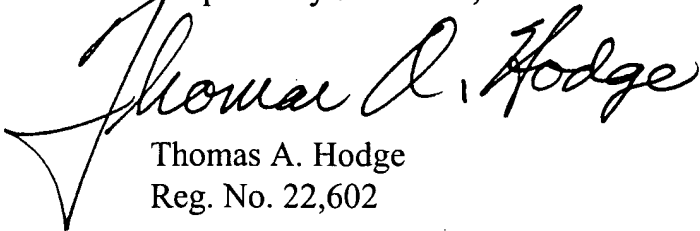
Further, applicants submit that the present invention is not rendered obvious by the cited references in the combination set forth by the Examiner. Applicants submit that the Examiner has not provided a proper basis upon which these references would be combined by a person having ordinary skill in this art **if that person is concerned about the weatherability of molding compositions**. With regard to the lack of a proper basis, applicants refer to *In re Geiger*, 2 USPQ2d 1276 (CAFC 1987), wherein the Court states at page 1278:

We agree with appellant that the PTO has failed to establish a prima facie case of obviousness. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, **absent some teaching suggestion or incentive supporting the combination**.

(Emphasis added.)

In view of the above discussion and reasoning, applicants submit that this application is in condition for allowance, which action is requested.

Respectfully submitted,

A handwritten signature in cursive script, reading "Thomas A. Hodge". The signature is written in dark ink and is positioned above the printed name and registration number.

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